

# A B S T R A C T

An electromagnetic device, specifically a linear or rotary single- or multi-phase motor or generator comprising, for each phase, at least two relatively-movable sets of teeth of soft magnetic material, one set of teeth being associated with the stator and the other with the rotor, the size of the device being such as to enable it to generate a maximum magnetic potential  $U_{\max}$  of at least  $1.7 \times 10^{-4} J / \mu_0$  ampere turns. The width  $E$  of the minimum air-gap between teeth of the rotor and of the stator as measured in the direction perpendicular to the degree of freedom is approximately equal to or greater than  $0.7 \mu_0 U_{\max} / J$  where  $\mu_0$  is the permeability of free space,  $U_{\max}$  is the maximum generated magnetic potential difference for causing the magnetic field to pass through the air-gap  $E$ , and where  $J$  is the maximum polarization of the soft magnetic material used for making the teeth.